LIVING WITH CLIMATE CHANGE:
What should we tell the children?

Notes from a public lecture (2015)

Introduction

- Climate change is a 'big' story because it affects everyone, whether locally or in the wider world, and I believe that all adults have a responsibility to help prepare young people for a future that will be very different from today.
- This is a story not just about changing weather but also about the world we want to live in and the future we want to create for ourselves, our children, grandchildren and our communities.

1. WHAT'S THE PROBLEM?

- Last year Sir David King (2014), the Government's Special Representative on Climate Change and former Government Chief Scientific Advisor, asserted that 'Climate change is not the biggest challenge of our time, it's the biggest challenge of all time'.
- Many experts, researchers and commentators are saying similar things and 2014 has been confirmed as the hottest year on record.

Climate change

- Climate change is both a global and local problem, so it's *our* problem. The Intergovernmental Panel on Climate Change (IPCC) was set up in 1988 to collate research from climate scientists around the world.
- Every few years it publishes updated reports for policy makers and others. Their findings should be taken seriously since there is clear danger ahead unless we all work together to avert it (IPCC, 2014).

What do we know already? (*New Scientist,* 2011)

- *Causes:* emissions of greenhouse gases, especially C02, have raised average global temperatures by 0.85C in last 100 years.
- *Source*: most CO2 comes from burning fossil fuels (coal, oil, gas) used to power the energy intensive consumerist world we live in.
- *Consequences*: warmer air holds more moisture and is thus more volatile, which causes more extreme weather. Sea-levels will rise by many metres, as when oceans warm they expand.

What is still to be clarified?

- *How high* CO2 levels may rise, how much hotter it will become and at what rate this

will occur.
- *How quickly* sea-levels will rise and the impact of this on coastal cities and areas.
- *Whether* politicians, business, educators and others will take this threat seriously enough to work together to help create a low carbon economy.

Impacts already occurring

- Examples include: a continuing decrease in Arctic pack-ice; record breaking drought in California; Pacific islanders migrating from homes only a few feet above sea-level; fiercer bushfires in Australia; in parts of Louisiana sea-level rise is covering the area of a football pitch every hour.
- UK: shifting seasons, heavy rain, floods and drought; no house safe from floods because rain now can be torrential; coastal damage at Dawlish; flooding in the Somerset Levels.

Why is this difficult to grasp?

- Reasons include: one can't immediately see CO2; we're used to variable weather in this country; it's too scary; people disagree about it; it's too big a problem.

Who are the climate change deniers?

- Research into the most prominent deniers found they are often funded by big fossil fuel companies and right-wing think-tanks. In the US death threats have been made against some leading climate change scientists.
- Historically such deniers also opposed the scientific evidence on acid rain, the ozone hole and the health dangers associated with smoking (Oreskes & Conway, 2010).
- This position arises from the belief that any attempt to regulate free-market economics is an attack on human liberty.

What needs to be done?

- It is generally agreed that if average global temperatures rise more than 2C runaway climate change is likely. However, to keep within this figure, CO2 emissions need to be cut by 80%.
- Everything we've been taught about 'progress' demands a high carbon society, something that we and the planet can no longer afford. The challenge: how to move towards a vibrant low carbon economy.

Energy

High-carbon

- Most of our energy comes from fossil fuels, all of which when burnt are high CO2 emitters which directly help create climate change.
- *Oil* – cheap oil was the golden source of energy in C20th, fuelling our transport, our heating, used in the making of innumerable materials from plastics to fabrics, as well as

pesticides and fertilisers. However, there are no more big oil fields to discover, no more 'easy' oil.

- We are now moving into the age of declining and 'difficult' oil, e.g. the Alberta tar sands; in Arctic waters; in deep waters, such as the Gulf of Mexico, where the BP catastrophe occurred. Oil from such sources is more difficult to get, more expensive to get and often causes serious environmental damage (Leggett, 2014).
- *Gas* – has lower CO2 emissions but the rush to fracking (hydraulic fracturing of rocks) is opposed by many of the public and well production declines relatively quickly. It is not considered a long term answer to energy security.
- *Coa*l – is the dominant energy source globally and at its highest consumption since the 1960s, it is also one of the most polluting of the fossil fuels.
- If CO2 targets are to be kept below the 2C increase most of the world's fossil fuel reserves need to be left in the ground.

Low-carbon

- Low carbon energy is clean, abundant and renewable – wind, solar, water and biomass. These are the energy sources now being developed to replace use of the fossil fuels which have turned out to have such a sting in their tail.
- *Wind* – given the UK's windy weather on and offshore wind-farms will play a major part in a low carbon economy; condemning wind generators as 'visually intrusive' is to totally miss the wider need.
- *Solar* - arrays on rooftops of buildings and solar farms will also make a vital contribution to a low carbon electricity grid with appropriate energy storage.
- *Water* – hydro, wave and tidal power; the latter two are increasingly under development around our shores; *Biomass* – also has a part to play, burning wood, straw and organic materials to create energy. Drax coal-fired power station has partially converted its plant to biomass.
- Renewables globally saw their fastest growth in 2013 and provide 22% of the world's electricity. In Denmark renewables provide 26% of the country's energy. The UK led the way in the first Industrial Revolution (from water power to steam), it could also lead the way in a second revolution in the 21st century, from fossil fuels to renewables.

More than I need to know!

Common responses to climate change

- People commonly experience a wide range of emotions and reactions in response to climate change, including anxiety, anger, sadness, resignation and denial (Australian Psychological Society, 2014).
- But recent research has shown that nearly 9 out of 10 people in the UK agree that climate change is happening and 84% attribute this somewhat or entirely to human activity (Harvey, 2015).

Sharing concerns and feelings that arise

- Talking about climate change is difficult because it raises troubled feelings that go against our social, cultural and political norms. However, experience shows that rather

than repressing feelings such as these they are better resolved if supportively shared in a safe context with like-minded others.

Developing one's sense of agency

- From owning our fears and concerns and sharing these in a supportive context with others a sense of agency (belief in one's ability to make a difference) can begin to emerge and a desire to find others with similar concerns. This, plus a willingness to learn more, then makes it possible to engage in action for change in the community with others, itself its own reward.

2. A CHOICE OF FUTURES

- Futurists distinguish between what are known as probable and preferable futures. Probable futures are all those we *expect* to come about as a result of current trends and events. By contrast preferable futures are all those which we would most *wish* to come about as a result of our deepest hopes and aspirations. These two categories can be applied to society as a whole and also to one's personal life.
- A lot of work has also been done on the nature of more sustainable futures. Something is *sustainable* if it can continue indefinitely without damaging people or planet (Visser, 2012). Something is *unsustainable* if it causes damage to either people or the planet.
- Manifestly many of our processes and practices, whether economic, political, technological or social are, on this count, unsustainable. More sustainable futures are thus preferable futures in that they focus on both human well-being and the well-being of the biosphere (atmosphere, soil, waters, flora and fauna).

Two carbon scenarios

- Future scenarios, both written and visual, are often used to flesh out what different futures might look like given the occurrence of different trends and events. Scenarios can be as long as a book or as short as a paragraph. They are designed to prompt discussion: Is this a future we would want to come about? If not, what needs to change in the present to stop it coming about? If it is a preferable future what do we need to do to ensure that some version of it does come about?
- Two brief contrasting scenarios highlight what is at stake. *Business as Usual* (high carbon) – 'Government sees no urgent need to give a clear lead over climate change or continued use of fossil fuels. Society is thus unprepared for the effects of runaway global warming and the consequent hazards that follow for young and old.'
- *Sustainable Transition* (low carbon) – 'All sectors of society work to build a more sustainable and resilient future based on renewable energy, with mitigation and adaptation fully in place. This sees the gradual emergence and establishment of a vibrant low carbon society'. For more detailed examples see Hicks (2014).
- The social and cultural shift required here is reminiscent of the transition from water power to coal, but this time it needs to be from fossil fuels to renewable (Transition

Network, 2015). It is important to note here that one of the key aims of the Welsh 'Well-being of Future Generations Bill' is to create 'an innovative and productive low carbon economy...'

- To minimise the impact of climate change on the future we (and young people) need to know about and engage in two main types of response, locally and nationally.

Adapting to climate change

- This means learning how to live with changing weather conditions in the UK, in particular warmer temperatures, shifting seasons, higher sea-levels, more floods, drought and extreme weather. This will require significant changes to the way we live and work, e.g. how buildings are designed, where they are located, how we travel, how we farm, the jobs we do.
- Adapting to climate change will bring many benefits because it is about being prepared in advance for situations that can drastically affect our communities, homes, livelihoods and the natural environment.
- The Institute of Civil Engineers, for example, published a report called *Facing up to Rising Sea Levels* (2010), which talks of 'turning a negative into a positive'. Three possible responses to rising sea-level are examined: Retreat (the sea is allowed to flood some low-level coastal areas); Defend (building flood defences to keep the sea out); Attack (moving out offshore with buildings floating or on stilts).
- Farming, for example, will have to adapt to different weather conditions which may necessitate growing different crops. UK food security will become more important probably with less emphasis on the global food chain because this will be under stress too. Food miles will be more important and more food may be grown locally.
- Public health services will also need to adapt to climate change. Projections of heat-related deaths, for example, may rise by around 257% by the 2050s from a current baseline of c.2000 per annum (Hajat et el., 2015)
- Important examples of adaptation are to be found in the work of the Climate Change Commission for Wales and associated legislation as well as Monmouthshire County Council's work with Climate Change Champions.

Mitigating climate change

- Mitigation requires that all aspects of life and work in our homes and communities be examined to identify the carbon emissions created by their use or manufacture. Without this global warming will continue to increase. Mitigation involves rethinking how much energy we use and how it is generated, how energy efficient buildings are (both new and old), how we may travel and in what type of vehicle, as well as what our overall carbon footprint may be (Carbon Footprint Calculator, 2014).
- The Radian Housing Association, for example, has become an authority on low carbon retrofitting of older buildings and in relation to new build. In Aberdare there is a fifteen

year low carbon project taking place, including solar PV and water heating, heat pumps and low energy street lighting.

- In terms of transport there needs to be an emphasis on bus and rail. There is also increasing availability of electric, hybrid (electricity/petrol), and low CO2 vehicles (recharging electric batteries, of course, needs to be from renewable sources).
- Historically it is the world's richer countries which have been responsible for most CO2 emissions so they should also bear the greatest burden for mitigation. As a result of recent campaigning some investors have begun to divest from fossil fuels, for example the Rockefeller Foundation, the World Council of Churches and Glasgow University, the first university to do so in Europe.

3. TELLING NEW STORIES

- Robin Richardson (1996) argues 'We need stories – myths and folktales as well as true accounts – to help us hold the beginnings, middles and ends of our lives together. Without them we shall not have hope: yes, to lose stories is to lose hope, but conversely to construct and cherish stories is to maintain hope.'
- 'Stories' (economic, political, social and cultural) do indeed hold our lives together. They influence much that we do and take for granted because they are so deeply embedded in our subconscious that we often don't know that they're there. Fictional stories, real life stories and success stories can help us find our way in troubled times. They provide something to hold on to so that we don't give up hope or get lost. They give direction.
- In the face of climate change the high carbon story can now be seen as dangerous and therefore redundant. It is not a story that leads to human or planetary wellbeing. What we now need to give us direction are new and exciting narratives of low carbon change (Centre for Alternative Technology, 2010) in our homes and communities.

Nurture in the environment

- In working with young people climate change concerns need to be situated in the wider environmental context. If children have little knowledge or interest in the natural environment they are unlikely to be concerned about their own or others' impact on it. Here are six key elements in beginning to help children learn from and in turn nurture the natural environment.
- 1. Allow children to spend time in nature: parks, fields, woods, hills, lakes and coasts; 2. Help children find something positive to do for the environment, whether looking after a place, growing things, appreciating it through study, sketching or playing; 3. Listen seriously to concerns that children have about the natural world; 4. Encourage them to tell you how they feel and think about the places they go to; 5. Find out what they know and think they know about nature and discuss this positively with them; 6. Reassure children in relation to their concerns and help them to develop a sense of agency (willingness to participate in care of the environment).

- Playing, exploring, learning, enjoying, looking after, being listened to and supported, all of these directly and indirectly help develop a respect for and love of different natural environments. If 'we only protect what we love' such experiential learning will help children feel a greater respect and responsibility for the biosphere that is their life-support system.

Age appropriate stories

- What sort of 'stories' might one begin to tell younger children about changing climate? However it's done it needs to suit their level of understanding and create interest not worry or fear. Some children's books that look at the environment or climate change run the danger of alarming children rather than showing them how they can play their part positively in 'sorting things out' with the help of adults.
- The beginning of a story for younger children might go like this ~ 'Fossil fuels (coal, oil and gas) were once seen as a great idea because they helped build our busy world. But then it was found out that using them to make electricity or fuel for transport also warmed up our atmosphere! This began to melt the ice and make the weather more changeable, so what had looked like a good idea now looked not so good. Today other sources of energy are available (sun, wind and water) which can't get used up because they're renewable and they don't warm up our atmosphere. So that's really great for us and animals too!'
- What sort of age appropriate stories might *you* come up with in relation to our changing world, I wonder?

Changing weather

- A long time ago geography textbooks often talked about 'difficult climates' and the hazards local people had to face if they had the bad luck to live in the Arctic or Sahara. Whilst such climates may have seemed difficult to western colonialists it was hardly likely that the locals considered their weather anything other than normal.
- The weather that we grow up with as children becomes our 'norm'. Weather which we may see as different or extreme will not necessarily be seen as such by children. We have the responsibility, however, of being prepared for torrential rain, unexpected flooding and periodic drought for example. This includes protection of the building, having appropriate clothing and having agreed safety rules.
- A sense of 'normality' is important - this is what we do in these circumstances, this is why it's important. For smaller children it can be like a game rather than causing alarm. See official Flooding Advice (2014) and also learn from other countries about how different weather conditions are handled: monsoon, floods and heat waves for example. NB. Bergen has 88" of rainfall p.a. and Usk c.55".

We all use energy

- Children are naturally inquisitive and we should support this process - Where does our energy come from? Does it have an impact on the environment? How energy efficient is our house? Are there local schemes to help make older houses more energy efficient? Where can we see examples of new low carbon buildings? Where can we see solar panels/a wind farm? How energy efficient can we be? Questions such as these are vital whether at home, in school or the community.
- The 3-bed detached Denby Dale Passivhaus (2014) was built for £141,000 and uses 90% less energy for heating than the average house. It was designed as a template for low energy housing that any building company could take up using familiar materials and techniques.

Sustainable schools

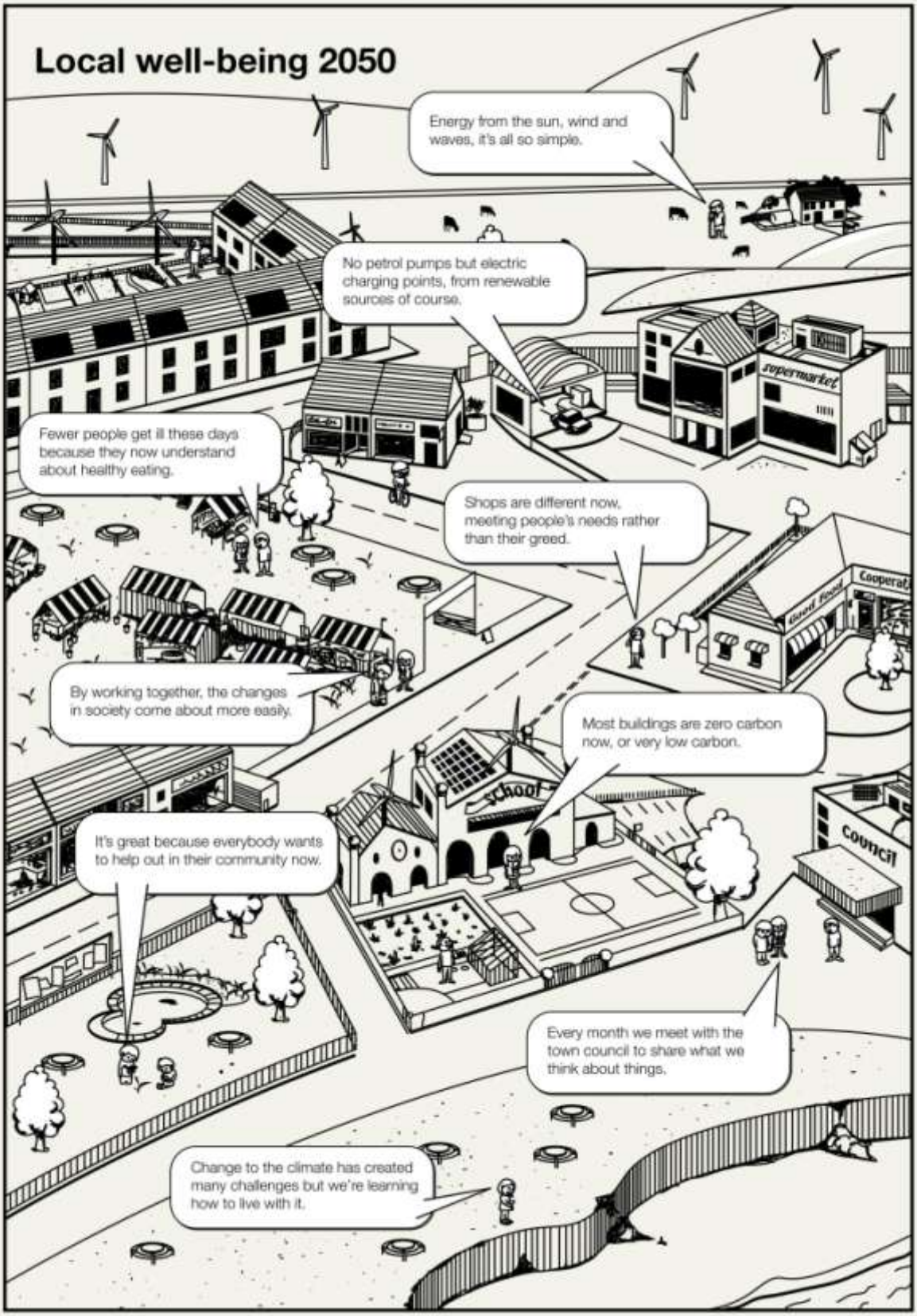
- The Ashden Awards (2014) for renewable energy initiatives has a special section for schools. These contain great examples of what children are doing in schools around the country. South Farnborough Infants School won an award recently. They decided to compete because they wanted to help the next generation become more energy conscious.
- A culture of sustainability and responsibility were already at the core of the school and its curriculum. Daily energy targets are set for pupils to monitor and make monthly comparisons. In the first year electricity consumption dropped by 17%, saving £1000. A new gas boiler led to a 24% drop in energy use and savings of £5000. Each year all families are lent energy monitors in order to take part in a Two Week Energy Challenge, a great example of school, home and community influencing each other and working together on energy issues.

Changing climate

- As children get older they can be encouraged to ask/answer the following four sets of questions about climate change (Hicks, 2009). 1. What do we know/need to know about climate change? What are its symptoms and its causes? What are its consequences (probable futures)? 2. What do I/we feel about this situation? What are the concerns we wish to share? What are the hopes we might have? 3. What are the options facing us? What do I/we want to see happening (preferable futures)? Which will I/we chose to work towards? 4. What do I/we need to do? Locally, nationally, globally. Who is able to support us in this?

Low carbon futures

- This scenario activity (see below) can be used at home or school to prompt thinking about what a low carbon future might look like. It comes from *Sustainable Schools,*



From: Hicks, D. (2012) *Sustainable Schools, Sustainable Futures*, WWF

Sustainable Futures (Hicks, 2012), which also contains chapters/scenarios on food and farming, energy and water, travel and transport, consuming and wasting, buildings and biodiversity, inclusion and participation, local wellbeing, global connections. See also Jonathan Porritt's excellent *The World we Made: Alex McKay's story 2050*, Phaidon.

Instructions

Look carefully at this scenario of what a more sustainable future might look like. Imagine you are visiting this future with a group of friends to gather information. Look around to see how things are different. Listen to what people are saying about life in this future.

Questions

1. What are the first three things you notice about this future?
2. In what ways is this future different from today?
3. What are people doing and saying that is different from today?
4. What are the advantages/disadvantages of living in this future?

- One of the most detailed explorations of how a low carbon society might come about is Jonathan Porritt's (2014) book T*he World We Made: Alex McKay's story from 2050.* As the subtitle suggests it is one person's story, written in 2050, and looking back at all the changes that had occurred in bringing about the shift to a low carbon economy.

In conclusion

- Some time ago I was invited to speak at a day conference for primary heads in Cornwall on Sustainable Schools and it was this experience that prompted me to write *Education for Hope in Troubled Times.* In one of the sessions a school eco-team came to talk about what they'd been doing. I told their teacher how much I'd been impressed by them and she said 'Can you write and tell them that?' This is the letter I wrote (2009).
- 'Dear Eco-team,
  Having been at the recent Head's conference on Sustainable Schools what I enjoyed most that day was *your* contribution. I was most impressed by the way in which you stood up in front of a large and important audience and coolly gave your presentation as if it was something you did every day. Many of my students would not have spoken as clearly as you did, so I really liked the way in which you gave your presentation.
  But I also enjoyed, and was impressed by, all the things that you have been doing on sustainability at your school. When I watched you I realised how knowledgeable you are about these things and what excellent activists you are for a more sustainable low carbon future. Well done! I hope you will persuade lots of other people about the importance of what you are doing because you really inspired me.'
- They were positive about the future, they understood what needed doing and were getting on with it at home, in school and the community – helped by understanding adults.

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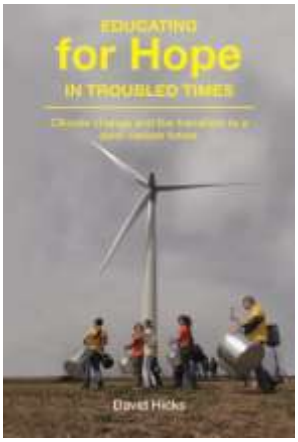

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